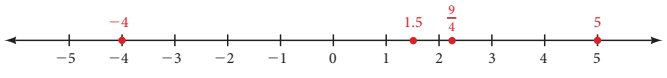
Chapter 1

Exercise Set 1.1

Vocabulary Review **1.** real number line **3.** real **5.** nonzero **7.** algebraic expression, variables

Problems 1-7.



9. $\frac{18}{24}$ **11.** $\frac{12}{24}$ **13.** $\frac{15}{24}$ **15.** $\frac{36}{60}$ **17.** $\frac{22}{60}$ **19.** $\frac{50}{60}$
21. 6 **23.** 22 **25.** 3 **27.** 7 **29.** 3 **31.** 17
33. −10, 10 **35.** $-\frac{3}{4}, \frac{3}{4}$ **37.** $-\frac{11}{2}, \frac{11}{2}$ **39.** 3, 3
41. $\frac{2}{5}, \frac{2}{5}$ **43.** $-x, |x|$ **45.** $<$ **47.** $>$ **49.** $>$
51. $>$ **53.** $<$ **55.** $<$ **57.** $x + 5 = 14$
59. $5y < 30$ **61.** $5y \geq y - 16$ **63.** $\frac{x}{3} = x + 2$
65. 4 inches; 1 square inch **67.** 4.5 inches; 1.125 square inches
69. 10.25 centimeters; 5 square centimeters **71.** −8, −2
73. −64°F; −54°F **75.** −15°F **77.** −100 feet; −105 feet
79. 93.5 square inches, 39 inches **81.** 1,387 calories
83. 654 more calories **85. a.** $263,800,000 **b.** False **c.** True

Exercise Set 1.2

Vocabulary Review **1.** same **3.** opposite **5.** supplementary
Problems **1.** 3 **3.** −7 **5.** −14 **7.** −3 **9.** −25
11. −12 **13.** −19 **15.** −25 **17.** −3 **19.** −6 **21.** 0
23. −10 **25.** −16 **27.** −12 **29.** −7 **31.** 35
33. 0 **35.** 9 **37.** −8 **39.** −4 **41.** −28 **43.** 6
45. 6 **47.** 8 **49.** 18 **51.** 10 **53.** 17 **55.** 13
57. 3 **59.** 15 **61.** 1 **63.** 1 **65.** 38 **67.** 68
69. 5 + 9 = 14 **71.** [−7 + (−5)] + 4 = −8
73. −7 − 4 = −11 **75.** [4 + (−5)] − 17 = −18
77. 8 − 5 = 3 **79.** 8 − (−5) = 13 **81.** 3
83. 10 **85.** 35° **87.** 60° **89.** −12 + 4
91. −35 + 15 − 20 = −$40 **93.** 10 + (−6) + (−8) = −$4
95. 73 + 10 − 8, 75°F **97.** 188 degrees **99.** 265 degrees
101. $2,000 **103.** 2006, $500
105. a. 5.7 million **b.** 8.5 million **c.** 41.3 million

Exercise Set 1.3

Vocabulary Review **1.** absolute values **3.** negative
Problems **1.** −42 **3.** −16 **5.** 3 **7.** 121 **9.** 6 **11.** −60
13. 24 **15.** 49 **17.** −27 **19.** 6 **21.** 10 **23.** 9
25. 45 **27.** 14 **29.** −2 **31.** 216 **33.** −2
35. −18 **37.** 29 **39.** 38 **41.** −5 **43.** 37 **45.** 80
47. 17 **49.** 40 **51.** $-\frac{10}{21}$ **53.** −4 **55.** 1 **57.** $\frac{9}{16}$
59. 0 **61.** 0 **63.** 0 **65.** 0 **67.** 4 **69.** 24
71. 81 **73.** $\frac{9}{4}$ **75.** 1°F **77.** 465 calories **79.** $264.60
81. $848.20 was gained

Exercise Set 1.4

Vocabulary Review **1.** reciprocal **3.** negative **5.** zero
Problems **1.** −2 **3.** −3 **5.** $-\frac{1}{3}$ **7.** 3 **9.** $\frac{1}{7}$ **11.** 0
13. 9 **15.** −15 **17.** −36 **19.** $-\frac{1}{4}$ **21.** $\frac{16}{15}$ **23.** $\frac{4}{3}$
25. $-\frac{8}{13}$ **27.** −1 **29.** 1 **31.** $\frac{5}{9}$ **33.** $\frac{3}{5}$ **35.** $-\frac{5}{3}$
37. −2 **39.** −3 **41.** Undefined **43.** 0 **45.** 5
47. $-\frac{7}{3}$ **49.** −1 **51.** −7 **53.** $\frac{15}{17}$ **55.** $-\frac{32}{17}$ **57.** $\frac{1}{3}$
59. 1 **61.** 1 **63.** −2 **65.** $\frac{9}{7}$ **67.** $\frac{16}{11}$ **69.** −1
71. −1 **73. a.** 25 **b.** −25 **c.** −25 **d.** −25 **e.** 25
75. a. 10 **b.** 0 **c.** −100 **d.** −20 **77.** 3 **79.** −10
81. −3 **83.** −8 **85.** $350 **87.** Drops 3.5°F each hour
89. 14 blankets **91.** 48 bags **93.** 6 **95.** 28
97. a. $20,000 **b.** $50,000 **c.** Yes, the projected revenue for 5,000 e-mail addresses is $10,000, which is $5,000 more than the list costs. **99.** 24.5°F/minute, 9.4°F/minute

Landmark Review 1.1– 1.4

1. $-\frac{3}{4}, \frac{3}{4}$ **3.** 11 **5.** $y + 15 = 27$ **7.** −39 **9.** −3
11. b **13.** 25 **15.** −3 **17.** −3

Exercise Set 1.5

Vocabulary Review **1.** e **3.** d **5.** c **7.** j **9.** a
Problems **1.** $(4 + 2) + x = 6 + x$ **3.** $x + (2 + 7) = x + 9$
5. $(3 \cdot 5)x = 15x$ **7.** $(9 \cdot 6)y = 54y$ **9.** $\left(\frac{1}{2} \cdot 3\right)a = \frac{3}{2}a$
11. $\left(\frac{1}{3} \cdot 3\right)x = x$ **13.** $\left(\frac{1}{2} \cdot 2\right)y = y$ **15.** $\left(\frac{3}{4} \cdot \frac{4}{3}\right)x = x$
17. $\left(\frac{6}{5} \cdot \frac{5}{6}\right)a = a$ **19.** $(3 \cdot 5)xy = 15xy$ **21.** $8x + 16$
23. $8x - 16$ **25.** $4y + 4$ **27.** $18x + 15$ **29.** $6a + 14$
31. $54y - 72$ **33.** $x + 2$ **35.** $12x + 18y$ **37.** $12a - 8b$
39. $3x + 2y$ **41.** $4a + 25$ **43.** $6x + 12$ **45.** $14x + 38$
47. $8x - 17$ **49.** $2x + 1$ **51.** $6x - 3$ **53.** $5x + 10$
55. $6x + 5$ **57.** $5x + 6$ **59.** $6m - 5$ **61.** $7 + 3x$
63. $3x - 2y$ **65.** $0.09x + 180$ **67.** $0.12x + 60$
69. $a + 1$ **71.** $1 - a$ **73.** Commutative
75. Multiplicative inverse **77.** Commutative
79. Distributive **81.** Commutative, associative
83. Commutative, associative **85.** Commutative
87. Symmetric **89.** Commutative **91.** Additive inverse
93. Multiplicative inverse **95.** Symmetric **97.** $3x + 6$
99. $9a + 9b$ **101.** 0 **103.** 0 **105.** 10 **107.** 1
109. No **111.** $8 \div 4 \neq 4 \div 8$
113. $4(2 + 3) = 20$ $(4 \cdot 2) + (4 \cdot 3) = 20$

Exercise Set 1.6

Vocabulary Review **1.** expression **3.** similar **5.** parentheses
Problems **1.** −3x **3.** $-a$ **5.** $10x + 2y$ **7.** $8a - 2b$
9. $\frac{9}{2}x - 3$ **11.** $a + 5$ **13.** $5x - 5$ **15.** $4a + 2$ **1**
7. $-9x - 2$ **19.** $0.75b - 11$ **21.** $0.17x$ **23.** $-0.16x$
25. $10x - 1$ **27** $21y + 6$ **29.** $-6x + 8$ **31.** $3a - 2$
33. $-4x + 26$ **35.** $y - 10$ **37.** $-11x + 4$ **39.** $2x - 12$
41. $10a + 33$ **43.** $1.1x - 3.2$ **45.** $6y - 46$ **47.** $-\frac{5}{2}x - \frac{7}{2}$
49. $2x$ **51.** $-2x - 9$ **53.** $7x$ **55.** $10y$ **57.** $0.17x + 180$
59. $0.02x + 400$ **61.** 5 **63.** −9 **65.** 4 **67.** 4
69. −37 **71.** −41 **73.** 64 **75.** 64 **77.** 144
79. 144 **81.** 49 **83.** 40 **85.** 3 **87.** 0 **89.** 15
91. 6 **93. a.** 42°F **b.** 28°F **c.** −14°F **d.** −32°F
95. a. $52 **b.** $55 **c.** $60 **97. a.** 20.7 lb/in^2 **b.** 24.7 lb/in^2
c. 34.7 lb/in^2 **99.** $0.29H$; 2.32 hours **101.** $\frac{17}{2}a - 5$

Chapter 1 Review

1. $25 - x = 9$ **2.** $7a = 63$ **3.** $5 + n > 10$ **4.** $\frac{10}{y} \leq 2$
5. 1 **6.** 0 **7.** 4, 4 **8.** $-\frac{7}{3}, \frac{7}{3}$ **9.** −6 **10.** 9
11. −19 **12.** 13 **13.** −30 **14.** 60 **15.** −8
16. $\frac{9}{16}$ **17.** −17 **18.** −13 **19.** 2 **20.** −9
21. 13 **22.** −4 **23.** e **24.** c **25.** d **26.** b
27. $15 - 2x$ **28.** $-36x$ **29.** $-12x + 15$ **30.** $6x - 4$
31. $-3b + 12$ **32.** $n - 13m$ **33.** $-2x - y$ **34.** $0.08x + 300$
35. $596,252,200 **36.** $1,246,427,700 **37.** $228,095,700

Chapter 1 Cumulative Review

1. $2^4 \cdot 3 \cdot 5$ **2.** $2 \cdot 3^2 \cdot 13$ **3.** $2 \cdot 3^2 \cdot 17$ **4.** $3^2 \cdot 5 \cdot 11$
5. $\frac{3}{2}$ **6.** $\frac{1}{2}$ **7.** $\frac{5}{24}$ **8.** $\frac{7}{48}$ **9.** 7.245 **10.** 1.167
11. 20.22621 **12.** 2.5 **13.** 0 **14.** 0.06 **15.** 16
16. $\frac{98}{3}$ **17.** 18 **18.** 17 **19.** 9 **20.** 64 **21.** 17
22. 9 **23.** -5 **24.** -9 **25.** 3 **26.** -13 **27.** 60
28. -60 **29.** 6 **30.** -4 **31.** $6x - 12$ **32.** $-3x - 21$
33. $30x - 5$ **34.** $6x - 9$ **35.** $4a + 10$ **36.** $-4a - 2$
37. $8x + 21$ **38.** $-x + 20$ **39.** $6x - 5y$ **40.** $4a - 13$
41. $2x - 3$ **42.** $-x - 2y - 3$ **43.** -9 **44.** -5
45. 3 **46.** 16 **47.** -26 **48.** -3

Chapter 1 Test

1. $15 - x = 12$ **2.** $6a = 30$ **3.** $7 + a > 15$ **4.** $\frac{12}{n} \le 5$
5. -1 **6.** -11 **7.** 6, 6 **8.** $-\frac{5}{3}, \frac{5}{3}$ **9.** -3 **10.** 12
11. -11 **12.** -7 **13.** -28 **14.** 24 **15.** -3
16. $-\frac{27}{8}$ **17.** -13 **18.** -10 **19.** -7 **20.** 62 **21.** 2
22. -6 **23.** d **24.** e **25.** a **26.** c **27.** $12 + 3x$
28. $-15y$ **29.** $-10x + 15$ **30.** $-2x - 4$ **31.** $-4n + 10$
32. $-2a - 16b$ **33.** $x + y$ **34.** $0.11n + 240$
35. 123,760 dogs **36.** 82,446 dogs **37.** 4,771 dogs

Exercise Set 2.1

Vocabulary Review **1.** solutuion set **3.** addition
Problems **5.** Yes **7.** Yes **9.** No **11.** Yes **13.** No
15. Yes **17.** 11 **19.** 4 **21.** $-\frac{3}{4}$ **23.** -5.8 **25.** -17
27. $-\frac{1}{8}$ **29.** -4 **31.** -3.6 **33.** 1 **35.** $-\frac{7}{45}$ **37.** 3
39. $\frac{11}{8}$ **41.** 21 **43.** 7 **45.** 3.5 **47.** 22 **49.** -2 **51.** -16
53. -3 **55.** 10 **57.** -12 **59.** 4 **61.** 2 **63.** -5
65. -1 **67.** -3 **69.** 8 **71.** -8 **73.** 2 **75.** 11
77. **a.** 280 tickets **b.** \$2,100 **79.** 67° **81.** **a.** 225 **b.** \$11,125
83.

t	n
32	72
50	90
44	84
96	136

85. $x + 55 + 55 = 180$; 70° **87.** y
89. x **91.** 6 **93.** 6 **95.** -9
97. $-\frac{15}{8}$ **99.** 8 **101.** $-\frac{5}{4}$
103. $3x$ **105.** $-9x$

Exercise Set 2.2

Vocabulary Review **1.** nonzero **3.** division
Problems **1.** 2 **3.** 4 **5.** $-\frac{1}{2}$ **7.** -2 **9.** 3 **11.** 4
13. 0 **15.** 0 **17.** 6 **19.** -50 **21.** $\frac{3}{2}$ **23.** 12
25. -3 **27.** 32 **29.** -8 **31.** $\frac{1}{2}$ **33.** 4 **35.** 8
37. -12 **39.** -3 **41.** -4 **43.** 4 **45.** -15 **47.** $-\frac{1}{2}$
49. 3 **51.** 1 **53.** $\frac{1}{4}$ **55.** -3 **57.** 3 **59.** 2
61. $-\frac{3}{2}$ **63.** $-\frac{3}{2}$ **65.** 1 **67.** 1 **69.** -2 **71.** -2
73. 200 tickets **75.** \$1,390.85 per month **77.** 31
79. 21 **81.** 20 songs **83.** **a.** 20 ft. **b.** 35 ft. **c.** 75 ft.
85. 55 hours **87.** 2 **89.** 6 **91.** 3,000 **93.** 650
95. $3x - 11$ **97.** $0.09x + 180$ **99.** $-6y + 4$ **101.** $4x - 11$
103. $5x$ **105.** $0.17x$

Exercise Set 2.3

Vocabulary Review **1.** **a.** distributive **b.** LCD, decimals **c.** similar
3. multiplication
Problems **1.** 3 **3.** -2 **5.** -1 **7.** 2 **9.** -4 **11.** -2
13. 0 **15.** 1 **17.** $\frac{1}{2}$ **19.** 7 **21.** 8 **23.** $-\frac{1}{3}$
25. $\frac{3}{4}$ **27.** 75 **29.** 2 **31.** 6 **33.** 8 **35.** 0 **37.** $\frac{3}{7}$
39. 1 **41.** 1 **43.** -1 **45.** 6 **47.** $\frac{3}{4}$ **49.** 3 **51.** $\frac{3}{4}$
53. 8 **55.** 6 **57.** -2 **59.** -2 **61.** 2 **63.** -6 **65.** 2
67. 20 **69.** 4,000 **71.** 700 **73.** 11 **75.** 7
77. **a.** $\frac{5}{4} = 1.25$ **b.** $\frac{15}{2} = 7.5$ **c.** $6x + 20$ **d.** 15 **e.** $4x - 20$
f. $\frac{45}{2} = 22.5$ **79.** $x = 3$ or 3 robot events were entered
81. \$4,200 **83.** 14 **85.** -3 **87.** $\frac{1}{4}$ **89.** $\frac{1}{3}$
91. $-\frac{3}{2}x + 3$ **93.** $\frac{5}{4}x - 5$ **95.** $4x - 3$ **97.** $8x + 3$

Exercise Set 2.4

Vocabulary Review **1.** variable **3.** isolate **5.** supplement
Problems **1.** 100 feet **3.** 0 **5.** 2 **7.** 15 **9.** 10
11. -2 **13.** 1 **15.** **a.** 2 **b.** 4 **17.** **a.** 5 **b.** 18
19. $l = \frac{A}{w}$ **21.** $h = \frac{V}{lw}$ **23.** $a = P - b - c$
25. $x = 3y - 1$ **27.** $y = 3x + 6$ **29.** $y = -\frac{2}{3}x + 2$
31. $y = -2x - 5$ **33.** $y = -\frac{2}{3}x + 1$ **35.** $w = \frac{P - 2l}{2}$
37. $v = \frac{h - 16t^2}{t}$ **39.** $h = \frac{A - \pi r^2}{2\pi r}$ **41.** $t = \frac{I}{pr}$
43. **a.** $y = \frac{3}{5}x + 1$ **b.** $y = \frac{1}{2}x + 2$ **c.** $y = 4x + 3$
45. **a.** $y = -\frac{1}{2}x - 2$ **b.** $y = -3x + 2$ **c.** $y = -\frac{1}{3}x - 1$
47. $y = \frac{3}{7}x - 3$ **49.** $y = 2x + 8$ **51.** 60°; 150° **53.** 45°; 135°
55. 10 **57.** 240 **59.** 25% **61.** 35% **63.** 64
65. 2,000 **67.** 150°C; yes **69.** 20°C; yes **71.** $C = \frac{5}{9}(F - 32)$
73. 46.3% **75.** 5.3% **77.** 7 meters **79.** $\frac{3}{2}$ or 1.5 inches
81. 132 feet **83.** $\frac{2}{9}$ centimeters
85.

Pitcher, Team	Rolaids Points
Heath Bell, San Diego	144
Brian Wilson, San Francisco	135
Carlos Marmol, Chicago	107
Billy Wagner, Atlanta	128
Francisco Cordero, Cincinnati	130

87. The sum of 4 and 1 is 5. **89.** The difference of 6 and 2 is 4.
91. The difference of a number and 5 is -12.
93. The sum of a number and 3 is four times the difference of that number and 3.
95. $2(6 + 3) = 18$ **97.** $2(5) + 3 = 13$ **99.** $x + 5 = 13$
101. $5(x + 7) = 30$

Landmark Review 2.1–2.4

1. 12 **3.** 5.2 **5.** 4 **7.** 4 **9.** 3 **11.** $\frac{A}{w} = l$
13. $18 - 3y = x$

Exercise Set 2.5

Vocabulary Review **1.** known **3.** variable **5.** sentence
Problems **1.** 8 **3.** 5 **5.** -1 **7.** 3 and 5 **9.** 6 and 14
11. Shelly is 39; Michele is 36 **13.** Evan is 11; Cody is 22
15. Barney is 27; Fred is 31 **17.** Lacy is 16; Jack is 32
19. Patrick is 18; Pat is 38 **21.** $s = 9$ inches **23.** $s = 15$ feet
25. 11 feet, 18 feet, 33 feet **27.** 26 feet, 13 feet, 14 feet
29. $l = 11$ inches; $w = 6$ inches **31.** $l = 25$ inches; $w = 9$ inches